

REMARKS

1. General

Claims 13 – 16 and 42 - 48 are pending in the application. Claims 1 – 12, 17 – 41, and 49 - 62 have been previously withdrawn from consideration. The Examiner has rejected Claims 13 - 16 and 42 – 46 and has objected to Claims 47 and 48.

The Examiner has requested correction of the priority data as stated in the first paragraph of the Specification. The Examiner has requested amendments to the Abstract so as to conform to abstract language and format requirements.

The Examiner has rejected Claims 13 – 16 under 35 U.S.C. §102(e) as being anticipated by **Minerbo et al.** (U.S. Patent No. 6,304,086).

The Examiner has rejected Claims 42 – 46 under 35 U.S.C. §103(a) as being unpatentable over **Minerbo et al.** in view of **Luling** (U.S. Patent No. 5,241,273).

Claims 47 and 48 have been objected to as depending upon a rejected base claim.

2. Response on Objections to the Specification

The Examiner has requested correction of the priority data as stated in the first paragraph of the Specification and has further requested amendments to the Abstract so as to conform to abstract language and format requirements. Applicant has adopted the Examiner's suggested language for the priority application recitation in the first paragraph [0001] of the Specification.

Applicant has amended the Abstract to both delete “implied” terminology and what the Examiner refers to as a “speculative” statement regarding other applications of the invention. Applicant notes that the deletion of these statements from the Abstract in no way removes such statements from the Application as a whole and acknowledges their restatement in other, more appropriate parts of the Specification.

3. Response on Rejection under 35 U.S.C. §102(e) [Minerbo et al.].

The Examiner has rejected Claims 13 – 16 under 35 U.S.C. §102(e) as being anticipated by **Minerbo et al.** (U.S. Patent No. 6,304,086). The Examiner notes that the present Application claims priority to U.S. Patent Application Serial no. 09/238,832, filed on January 29, 1999, which predates **Minerbo et al.**, which has an effective date of September 7, 1999. However, the Examiner believes that the material of the claims of the present application relates to new matter added in the CIP Application Serial No. 09/615,501. The Applicant respectfully traverses the Examiner's view of what constitutes the "new matter" disclosure of the CIP Application beyond the original disclosure of the priority Application and presents the following arguments in support of its position.

For simplicity and clarity, Applicant will refer to drawing figures and column/line text in the issued U.S. Patent No. 6,163,155, which issued from the priority Application Serial No. 09/238, 832, filed January 28, 1999 and will identify these as being from the "Original Disclosure". Applicant will refer to portions of the present Application by page and line number and will identify these as being from the "CIP Disclosure".

Claim 13 (and all of Claims 14 – 16 which depend there from) describes an embodiment of the present invention that was inherently, if not explicitly, disclosed in the Original Disclosure. This embodiment of Claim 13 includes two transmitter antennas and two receiver antennas and the associated processor. Four angles are identified, one for each of the two transmitter antennas and each of the two receiver antennas. The limitation that the angles of the two receiver antennas are different than the angles of the two transmitter antennas is also included in Claim 13. This arrangement is merely a member of the set of arrangements disclosed by means of very specific criteria set forth in the Original Disclosure.

The Original Disclosure describes the use of a plurality of transmitter and receiver antennas set at a variety of angles for determining formation resistivity. The Original Disclosure

states (at column 5, lines 6 – 10) that “well logging tool 10 is illustrated as having a plurality of transmitters T_1 , T_2 , T_3 ... T_n . Although a preferred embodiment comprises only three such transmitters (T_1 , T_2 , and T_3), T_n is illustrated for purposes of showing that additional transmitters may be used, if desired. The key measurement being made in every case involves one transmitter antenna and one receiver antenna. Comparisons are made between various combinations of transmitter/receiver antennas as the basis for determining horizontal resistivity, vertical resistivity and relative dip angle (see Original Disclosure column 3, lines 2 – 3). It is clear, however, that it is not the number of transmitter/receiver combinations but the angles of the antennas that is an important element in the present invention. As the Original Disclosure states (at column 2, line 66 through column 3, line 2) it is impossible to obtain all three parameters (horizontal resistivity, vertical resistivity and relative dip angle) where the transmitter and receiver antennas are all oriented co-axially with the tool, as was disclosed in the prior art.

It is further noted that the claim language (Claim 1) of the Original Disclosure provides for “at least one transmitter antenna”, “a first receiver antenna” and “a second receiver antenna”. Therefore, the Original Disclosure clearly contemplates and describes more than one transmitter antenna and places no limitation on there being a specific number. This clearly includes the number identified and claimed in Claim 13 of the present Application.

It is further noted that the Original Disclosure provides for Figure 7, which is described as being “a schematic block diagram illustrating several possible transmitter/receiver antenna configurations in accordance with the present invention” (column 4, lines 5 – 7). It should be noted that none of the schematic representations in Figure 7 show the three transmitter antenna embodiment shown in Figure 2 or the generic one transmitter/one receiver embodiment shown in Figures 5 and 6. The two transmitter/two receiver embodiment of Claim 13 of the present invention is inherently disclosed by these and other descriptions in the Original Disclosure. The

number of transmitter antennas can not therefore be seen as constituting “new matter” to the Original Disclosure.

The relative positioning of the transmitter antennas and the receiver antennas is also not a critical element of the arrangements described in the Original Disclosure. Specific attention is drawn to the third and fourth schematic representations shown in Figure 7 of the Original Disclosure (and of the CIP Disclosure). It is noted that these two configurations are repeated in the CIP Disclosure Figures 16 and 17, and clearly do not constitute “new matter”. These two structures are described yet again as simply “showing one possible antenna arrangement for a tool in accordance with the present invention” (page 12, paragraph 9). In similar fashion, Figures 19 and 20 in the CIP Disclosure are described yet again as simply showing “yet another possible antenna arrangement for a tool in accordance with the present invention (page 13, paragraph 2). It would have simply been too laborious and unnecessary for one skilled in the art, to disclose in specific detail each and every specifically unclaimed embodiment of the invention described in the Original Disclosure. Such is not required under 35 U.S.C. §112.

It is further noted that in the Original Disclosure there is no requirement that the transmitter antennas all be “above” the receiver antennas on the drill string or even that the transmitter antennas all be on one side of the receiver antennas. The only requirements relate to the angles of the antennas and the distances (in whatever direction) between the antennas. The specific order of antennas not being a requirement in the Original Disclosure it is inappropriate to construe a specific order as comprising “new matter” in the CIP Disclosure. The limitation in Claim 13 regarding the receiver antennas being “between” the transmitter antennas serves only to characterize the angles between the antennas and has nothing to do with a unique measurement or calculation. These angle definitions and characterizations are clearly disclosed in the Original Disclosure (as discussed above) as one of the critical elements in the present invention.

The present Application discusses the arrangement of Claim 13 in greater detail even though the disclosure of the arrangement was fully taught by the Original Disclosure. It is mentioned, for example, that Figures 16 and 17 (Original Disclosure Figure 7, schematics three and four) are but 180° rotations of each other. Therefore, the effective operation of the arrangement of Claim 13 is nothing more than the functional combination of these two schematics shown as examples in Figure 7 of the Original Disclosure. No new measurements are taking place, no new processing is required to obtain the information discernable by these two schematic orientations. Once again, it is noted that the feature common to all of the examples given is the variation in angle orientation between the transmitter and receiver antennas. This is also the element that is part of the claimed limitations in Claim 13. There are simply no features or claimed elements in Claim 13 that are not disclosed, explicitly or inherently, in the Original Disclosure. The **Minerbo et al.** reference should not, therefore, be cited as a 35 U.S.C. §102(e) reference against Claims 13 – 16.

4. Response on Rejection under 35 U.S.C. §103(a) [Minerbo et al. and Luling].

The Examiner has rejected Claims 42 – 46 under 35 U.S.C. §103(a) as being unpatentable over **Minerbo et al.** in view of **Luling**. Applicant notes that Claims 42 – 46 are methods claims that mirror the apparatus Claims 13 – 16. The same arguments, therefore, that have been presented above with respect to the applicability of the **Minerbo et al.** reference to Claims 13 – 16 are repeated here in their entirety with regard to the applicability of **Minerbo et al.** as a reference in combination with **Luling**. There are simply no elements of Claim 42 that are not disclosed, explicitly or inherently, in the Original Disclosure. The **Minerbo et al.** reference should not, therefore, be cited in combination as a 35 U.S.C. §103(a) reference against Claims 42 – 46.

CONCLUSION

Applicant believes this to be a complete response to the Office Action and requests allowance of the claims pending in the application. Should any further impediments to allowance remain, Applicant requests that the Examiner contact the undersigned attorney at the indicated phone number.

Respectfully submitted,

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